

## **CHAPTER 4**

### **DATA EXERCISE**

#### **4.1 INTRODUCTION**

The proposal of this thesis is to implement EmOC in the PHC of Morang district and evaluate the ongoing process. The objective of this data exercise is to observe operation of EmOC in Panathnikom district in Chonburi Province of Thailand and to test evaluation scheme which is planned to be incorporated in the evaluation of the ongoing process of EmOC in Morang district, after its implementation. Any lessons learned from this data exercise will be used to strengthen the evaluation scheme.

Panatnikom district was chosen, as EmOC facility already exist there. Furthermore, maternal mortality rate of Thailand is very low (27 per 100,000) as compared to that of Nepal and other developing countries (Taneepanichskul, 1994). This will provide me the opportunity to learn how Thailand, being a developing country, has been able to achieve such a low maternal mortality rate.

The specific objective is to evaluate the input, process and output of the EmOC services. For this purpose an input-process-output framework and the indicators provided by WHO and UNICEF are utilized. Based on it primary as well as secondary data was collected.

Data exercise was done for the following reasons:

- 1) To become familiar with the proposed indicators by WHO and UNICEF.
- 2) To test the evaluation scheme.

In essence, data exercise may be viewed as a pilot test for pre testing of the study instruments as well as entire study design. Any result and lessons learned from the pilot test will be used to correct and strengthen the evaluation study instrument and design.

## **4.2 Methodology**

An evaluation research technique has been used. This will facilitate, firstly to provide data on the extent to which programs objectives are achieved. Secondly, it answers questions about the program's activities and offers insight into the program's implementation and management.

The framework described by Starfield (1973) has been used to evaluate implemented EmOC service in Panathnikom district. This framework is depicted in figure 3.1 and described in section 3.4.2. For the evaluation, indicators of table 3.2 were used which are based on UNICEF and WHO guidelines. These indicators are described in sections 3.4.2, 3.4.3, 3.4.4 and 3.4.5.

## **4.3 Data Collection Procedure**

All district hospitals and primary health centers in Panantnikom district are governmental health facilities, run by regional or district level health officers. Ministry of Public Health makes overall policy decisions and are responsible for management functions (e.g. drug procurement and staff assignment).

The first step was ensuring that EmOC is accessible i.e. to ascertain whether adequate care is available. Panathnikom has one 120 bed district hospital with a comprehensive EmOC facility to which complicated obstetric cases are referred from different hospitals and health centers. Besides this 120 bed district hospital there are 25 health centers. Since 120 bed hospital has comprehensive EmOC it manages most of the obstetric cases. But cases which require blood transfusion and required blood group is not available, premature delivery is anticipated where surfactant is needed for lung maturity or intensive care is needed or if doctor is not available patient is referred to Chonburi Provincial hospital which is 26 km from Panathnikom district hospital which takes 30 minutes by car. Cases referred to Panathnikom district hospital are from 10 bed district hospital which only have basic EmOC and the cases are cephalopelvic disproportion, pregnancy induced hypertension, eclampsia, antepartum hemorrhage. Prior to referral there is communication between the district hospitals by radio communication or by telephone. This is to avoid delay in providing care to patient. Before referring the patient the case is stabilized by giving IV fluid such as Ringer Lactate, loading dose; magnesium sulfate IV in case of Eclampsia so on and so forth.

Health centers provide antenatal care, family planning, antenatal education, immunization and sells health insurance card. There is no EmOC service available in health center.

Both primary data and secondary data were collected during the data collection phase. In case of primary data in-depth interview of the medical personnel as well as administrators of the district hospital and health centers was conducted and observation of the case management for different complications by the EmOC was carried out.

People have access to an EmOC facility and the proportion of all women who need care ( i.e. women with obstetric complications) who reach the facility is also known. In comprehensive EmOC facilities, data were complete. In order to obtain a clearer sense of how the hospital and health center are functioning, the issues such as utilization patterns in emergency cases, availability of drugs, and supplies and staffing patterns were examined, waiting times were examined.

In order to assess the resources available for the treatment of emergency complications inventories of supplies and drugs were conducted. Staffing patterns at these facilities were examined. Administrative record provided most of these information.

#### **4.3.1 Primary data**

With the medical specialist in Panathnikom district hospital (120 beds) and medical personnel of three primary health centers (out of 25 primary health center of Panathnikkom district), in depth interviews were taken using the Form 1 ( Appendix

A) and Form 3 (Appendix C). Major task of this interview was to establish whether the functioning facilities has Basic EmOC or Comprehensive EmOC. Questions were as follows:

1. Type of facility ?
2. Type of Operating agency?
3. Total deliveries during 12-months period?
4. Normal deliveries during 12-months period?
5. Cesarean sections during 12-months period?
6. What services were performed during the last 12months ?
  - Parenteral antibiotics
  - Parenteral oxytocics
  - Parenteral sedatives/anticonvulsant
  - Manual removal of placenta
  - Removal of retained products
  - Assisted vaginal delivery
  - Blood transfusion
  - Cesarean section

Similarly with the director of the Panatnikom following informal questions were asked ?

7. Mode of payment by the patient ?
8. Existing manpower ?
9. Existing Equipment ?
10. Distance and time between the facilities?
11. Referral system
12. How many maternal deaths during one year period from October 1995 to September 1996.

These questions help to evaluate how the present EmOC health system are functioning according to the input-process-output model.

Question no 1,2,6,7,8, and 9 basically answers the questions related with *input* component of the evaluation model. Question 3,4,5, and 10 relates to the *process* component of the evaluation model. Question 12 evaluates the *output* component.

#### **4.3.2 Secondary Data**

In case of secondary data delivery room record and operational room record was utilized. These data were gathered for the duration of one year from October 1995 to September 1996. Data were collected using Form 2 (Appendix B) and Form 4 (Appendix D). Secondary data has been utilized in above calculation of indicators and it is provided in the appendix.

#### 4.4 Limitation of the study

Systematic bias can occur when conscious or unconscious factors affect selection of facilities for study. For e.g. selecting the facilities which are easily accessible as here in selection of Panatnikom district hospital. In any case, the data collected might give an overly favorable impression. The effects of chances are, of course, unpredictable, but they do tend to diminish as the number of facilities studied increases. Because of time constraint full scale evaluation of output, specifically maternal and infant outcome shown in the output indicators of table 3.2, could not be carried out. In the case of secondary data reliance on preexisting data sets may give false results.

#### 4.5 Findings from the study

Data collected for input component in Panatnikom district hospital

##### Personnel

Obstetric specialist	-	1
Registered nurse	-	6
Technical nurse	-	2

##### Equipment

Drugs	-	All required for comprehensive EmOC
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Ultrasound - 3

Radio Commun. - 1

Cesarean facility - 1

Facility for assisted vaginal deliveries

Forceps - 1

Vacuum - 1

Total beds - 120

Maternity wards - 7 beds (out of 120)

Facility

provided by specialist -high risk delivery

-complicated and assisted delivery

-Cesarean Section

-exploratory laprotomy

provided by nurse -conduct normal deliveries

-refer cases to provincial hospital when

intensive care is needed

-refer case to provincial hospital if Dr. is not

available or necessary blood group is not

available for transfusion.



### Indicator #1 : Amount of EmOC Services

a. Number of Basic EmOC facilities per 500,000 population

$$=(\text{Total Basic EmOC facilities in area}/\text{Population in Area})\times 500,000$$

Accepted level = 4 per 500,000 population

b. Number of Comprehensive EmOC facilities per 500,000 population

$$=(\text{Total Comprehensive EmOC facilities in area}/\text{Population in Area}) \times 500,000$$

Accepted level = 1 per 500,000 population

Though there is no basic EmOC, but the comprehensive EmOC coverage is adequate for the population.

### Indicator #2 Distribution of EmOC Facilities

For indicator #2 time from onset to death for emergency obstetric complications is depicted in table 3.3. Panathnikom District hospital is only 40 minutes by car or van at maximum from every household. This indicates high accessibility in terms of both time and availability.

### Indicator #3: Proportion of all Births in Basic and Comprehensive EmOC Facilities

It is estimated that 15% of pregnant women develop an obstetric complication. Thus, if the number of women receiving care in an EmOC facility is not at least 15% of all women giving birth in the population, then it is certain that some

proportion of obstetric complications are going untreated. EmOC facility should be used by the women who really need them for life saving obstetric care. If all of the women in the population who develop obstetric complication receive EmOC services, the proportion of the need for EmOC that is being met in the population is 100%.

Proportion of all births in Basic and Comprehensive EmOC facilities

= (Total deliveries in all EmOC facilities in area/Total annual births in area)  $\times$  100 %

Minimum acceptable level = 15%

Proportion of all births in Basic and Comprehensive EmOC facilities

= (1629/1639)  $\times$  100%=99.4%

This shows that all the birth takes place only in hospitals. This figure shows that Panatnikom district hospital is utilized as well as accepted by the people.

Indicator #4: MET NEED for EmOC

This indicates the problem recognition, diagnosis and management elements of Process component. In the previous indicator #3, 15% of all births takes place in EmOC facilities does not mean that women with complications are receiving care. It might be that most of the births in the EmOC facilities are normal deliveries. In that case, the women with complications would still be outside EmOC facilities and not receiving treatment. This indicator, therefore, is a more refined measure of the

utilization of EmOC services because it takes into account the type of activities occurring in the EmOC facilities.

Proportion of women estimated to have complications who are treated in EmOC facilities =  $(\text{Total complicated cases in all EmOC facilities}) / (\text{Total annual births in areas} \times .15) \times 100 \%$

Minimum acceptable level = 100%

Proportion of women estimated to have complications who are treated in EmOC facilities

$$= (169) / (1639 \times .15) \times 100 \% = 64\%$$

This result shows that its value is low. But actually it might be so that for this period there were only 169 complicated cases, some cases were not registered or some complicated cases went to other hospitals from Panatnikom district. However it should be noted that all the complicated case were managed well as our maternal death rate is 0%.

#### Indicator #5: Cesarean Sections as a Proportion of all Births

This also indicates the problem recognition, diagnosis and management elements of Process component. An indicator of whether EmOC facilities are, in fact, providing lifesaving obstetric services is the number of cesarean section as a proportion of all births. If the data shows that less than 5% of births are by cesarean section, this means that some women with life threatening complications are not

receiving necessary care and if it is above 15% then it means overuse or misuse of cesarean sections.

Cesarean sections as a proportion of all births= (Total cesarean sections in all EmOC facilities) /Total annual births in area×100%

Minimum = 5%

Maximum =15%

Cesarean sections as a proportion of all births

= (173 / 1639) ×100%=10.6%

Hence the value 10.6% falls in the acceptable range of 5% to 15%.

Indicator#6: Case Fatality Rate

This indicates the outcome. The case fatality rate among women with obstetric complications in EmOC facility should not exceed one percent.

Case fatality rate= (Total direct obstetric deaths in all comprehensive EmOC facilities / Total complicated cases in all Comprehensive EmOC facilities studied) ×100%

Case fatality rate =0%

Through the primary data it is established that there is one comprehensive EmOC in District hospitals with 120 beds. Primary Health Centers doesn't have

neither comprehensive nor basic EmOC facilities. However process indicators evaluation confirms the fact that it is enough for the population of 152,138 of Panatnikom district. The maternal deaths of 0 for the duration from October 1996 to September 1997 persuasively indicates that EmOC facility is functioning very well. Similarly distance, distribution and utilization factors shows the ability of EmOC facility.

#### **4.6 Situation Analysis of Morang District**

I have utilized both primary and secondary data from Morang district for situation analysis and for the identification of EmOC need in primary health center.

The population of Koshi zone is around 1,730,932 according to Central Bureau of Statistics (1991) and its area is about 9,669 sq. km. It comprises six districts as Morang, Sunsari, Dhankutta, Bhojpur, Tehrathum and Sankhuwasabha. Koshi hospital is located in Morang district, which has population of 676,417. Its area is 1855 sq. kilometers.

Secondary data exercise

Data from Koshi Hospital in Morang district.

Table 4.1 Situation of EmOC services at present

Obstetric Facility	Obstetric Care Providers	Expected EOC services
District level	Specialist-2 Medical officer-3 Nursing staff-10 Lab technician -1 Lab assistant 2 Dark room assistant- 1 Accountant 1 peon 10	Comprehensive EmOC
Primary Health Center 3	Doctor-1 Staff nurse-1 Health assitant-1 Auxiliary nurse midwife-2 Auxiliary health worker-2 Lab technician-1 Junior assitant-1 Peon-2 Sweeper-1	Basic EmOC

Table 4.2 The Primary health center of Koshi district in 1996 had:

ANC	200 per month
Bed	5
Normal delivery	100
Referred cases	60 cases

Data of Koshi hospital obtained from hospital registry book.

Percent of woman who had ANC in one year-15%.

Causes of maternal death- Hemorrhage, sepsis, hypertension,

Percentage of home delivery-90%.

Available EmOC services in Koshi district level hospital: comprehensive EOC services

Normal delivery : 68.95%

Abnormal delivery : 31.05%

### Percentage of types of Abnormal delivery

Cesarean section	: 19.75%
Forceps delivery	: 2.72%
Assisted vaginal delivery	: 2.33%
Breech delivery	: 2.02%
Retain placenta	: 1.43%
Twin delivery	: 1.40%
Vacuum delivery	: 1.40%

(data source: Registry entry of Koshi hospital)

### **Primary Data Exercise:**

Group discussion and Interview with an open dialog with no structured questionnaire (Kaesonthi and Harding, 1992) were conducted with three doctors in district hospital, auxiliary nurse of PHC and community leader. In these group discussion and interview my main focus was the extraction of expert knowledge and opinion in the field, So data is of qualitative type. General outline of the questions and answers are:



Q1. What type of referral system exist between community, PHC and district hospital ?

The cases are broadly divided into two groups: home delivery and health center delivery. 90 percent of cases deliver at home. Home delivered cases with complications in early stage, when they come to PHC, since no facility is available are referred to district hospital. But few other cases come to PHC in late stage of complications and since no management is available in PHC even if they are referred to hospitals they become the victim of delay in receiving proper treatment. 200 to 300 cases per month have ante natal care in PHC. Screened high risk cases are referred timely to district hospitals. These cases may or may not have normal delivery. Few cases come to PHC for delivery in spite of no ANC. If these cases develop complications, since no management facility is available in the PHC they are referred to the hospital. In the district hospital level the cases referred are either from PHC or directly from the community. These referred cases increase the mortality rate of the hospital because of the delay in referral and no management given to the patient on being referred.

Q2. What are the causes of maternal death and complications at home ?

Infection, Ruptured uterus, hemorrhage and Obstructed/ prolonged labor.

Q3 Which are the catchment area of the district hospital and what are their respective distances ?

- a. Mangalbari PHC-2 hours.
- b. Haraicha PHC- 2 and 1/2 hour.
- c. Jhurkiya 3

Q4 Why do cases come directly from the community without referring to PHC?

According to the patient's relatives and friends, since quality of care is very low and medical personnel are mostly not available in the health center, they feel futile to seek help in PHC.

Q5 What measures may be needed ?

There should be a special team to look after the women with special conditions like hemorrhage, sepsis, toxemia and eclampsia. These team members should have naphedipine in their pocket and emergency drug kit ready all the time.

Q6 What do you think about the maternal death records ?

*Maternal deaths are underreported.*

In Nepal one of the reason why it is difficult to register deaths is that most deaths do not take place in health facility, where health personal would be required to report them. Many people ( specially poor people) die at home or on their way to the hospital. Their deaths are not recorded. Even where records are available, under reporting may be serious problem because of poor record keeping.

*Maternal deaths are misreported.*

The term misreporting, as used here, means that the death was reported, but the death was incorrectly classified - that is not recorded as a maternal death. According to the Tenth International Classification of Diseases, a maternal death is defined as "The death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes" (Fortney, 1990). Thus, in order to classify a death correctly as a maternal death, it is necessary to know not only that women died, but also that the cause and timing of death meet the specification. The more complicated definition of maternal mortality thus facilitated misreporting. This has the same consequences for maternal mortality statistics as not reporting the death at all, i.e. underestimation. Some women die before they (or their relatives, who report the death) know that they are pregnant. In addition, some women who eventually die of obstetric complications survive the 42-day-period. Although such deaths are due to obstetric causes they are not classified as maternal deaths using the International Classification of Disease (Fortney, 1990). Determining medical causes of death is much more difficult than determining timing of death. Misreporting of maternal deaths is common if the death is due to complications of illicit induced abortion. In many societies abortion related death are concealed to protect the reputation of the women or her family. In Nepal, legal action is taken against people who perform abortion and/or against woman who obtained them (if they live). Thus, fear of legal prosecution is also a cause of misreporting of maternal deaths.

Q7 What do you think about community people ?

According to community leader ordinary people may be illiterate or even superstitious, but they are generally not stupid. People generally know perfectly well whether a particular facility has competent, concerned staff and key services available. But people tend to blame the community or culture for poor utilization of services. Even traditional beliefs may not be the formidable barrier they are often assumed to be. Improving the quality of services, in itself, can produce increase in utilization, but community activities are certainly a sensible next step.

Q8. How can the transportation delay be minimized ?

1. Ambulance services.
2. Vehicle of each office in rotation

#### **4.7 Lessons Learned from data Exercise**

1. From focus group discussion in Morang district I learned that community people should be consulted not only on the nature of the problem but on the solution as well. It was mentioned that the community people may be illiterate and even superstitious but they are generally not stupid , people generally know well whether a particular facility has competent, concerned staffs and key services

available. Hence one should be hesitant to blame the community or culture for poor utilization.

The discussion indicated that other barriers to utilization of health services in many areas are lack of transportation, negative staff attitudes and patient/provider relationships.

2. In Panathnikom district radio system for communication and referral between different health facility such as health center to district hospital and from the district to provincial hospital proves to be efficient, reliable and less expensive.
3. Gathering data to calculate process indicators does not require special forms or data system if the facility's record system includes information on obstetric complications. However, in most of the Health facility in Nepal, the maternity ward register does not have a column dedicated to information on maternal complication-the key event in terms of women's health. These same register often have number of columns devoted to the babies sex, weight, whether twins or not, but no column that explicitly asks about maternal complications.

Until recording and collecting this kind of information becomes routine, our information on efforts to reduce maternal deaths will be far from adequate. Making this kind of change in facility record system is not very difficult, as the data exercise in Panatnikom district has shown.